

computation of the limiting case. Wolff has not attempted to determine this limiting case nor has he computed the third moment. He has used the second moment only incidentally in determining what he calls a "coefficient of variation," which is not, however, the same quantity as is generally understood by the term. Wolff's "coefficient of variation" is defined as

$$\frac{2\sigma}{s} = \frac{2 \times 1.312 \text{ meters}}{3.993} = 0.567 \text{ meters,}$$

where  $\sigma$  = standard deviation

and  $s = h_0 \text{ max} - h_0 \text{ min}$

when  $h_0 \text{ max}$  = mean of the annual maxima of gage heights

$h_0 \text{ min}$  = mean of the annual minima of gage heights

$M$  = mean gage height

$\eta_2 = M + \frac{1}{2}(h_0 \text{ max} - M)$

$\eta_1 = M - \frac{1}{2}(M - h_0 \text{ min})$

It is easily seen that  $\eta_2$  represents a gage height midway between  $M$  and  $h_0 \text{ max.}$ , and  $\eta_1$  a height midway between  $M$  and  $h_0 \text{ min.}$

Stages above  $\eta_2$  are designated as "high-water stages"; they obtained on an average of 55 days a year (1904-1915). Stages below  $\eta_1$  are "low-water stages"; they obtained on an average of 104 days a year. Stages between these limits are "ordinary stages"; they obtained on an average of 206 days a year (1904-1915).

Although the published material is wholly tabular and graphic, the frequency polygon shows clearly the occurrence of different stages of the Paraná; this polygon, while skewed, is regular without breaks, and the tables

furnish data which may be studied by modern statistical methods. If these methods are applied to stream-flow data, it seems probable that the average frequencies of various stages can be determined in the limiting case and these determinations should be of value in studies of floods, water supply, and water rights.

#### MEAN LAKE LEVELS DURING MARCH, 1917.

By UNITED STATES LAKE SURVEY.

[Dated: Detroit, Mich., Apr. 5, 1917.]

The following data are reported in the "Notice to Mariners" of the above date:

Data.	Lakes.*			
	Superior.	Michigan and Huron.	Erie.	Ontario.
Mean level during March, 1917:				
Above mean sealevel at New York.....	<i>Fcet.</i> 602.33	<i>Fcet.</i> 580.46	<i>Fcet.</i> 571.53	<i>Fcet.</i> 245.17
Above or below—				
Mean stage of February, 1917.....	—0.00	—0.03	+0.18	+0.09
Mean stage of March, 1916.....	+0.18	+1.02	—0.34	—0.29
Average stage for March, last 10 years.....	+0.76	+0.55	—0.26	—0.68
Highest recorded March stage.....	+0.05	—2.49	—2.32	—2.64
Lowest recorded March stage.....	+1.67	+1.53	+0.70	+0.87
Average relation of the March level to—				
February level.....	—0.2	±0.0	+0.1	+0.2
April level.....	±0.0	—0.2	—0.6	—0.5

\*Lake St. Clair's level: In February—574.87; March—574.79.